

## CLAIMS

We claim:

1           1.     A wing for a micro air vehicle, comprising:  
2                 at least one layer of a resilient material having a camber forming a concave surface  
3     facing downward;  
4                 wherein the wing is bendable from a steady state position in a first direction such that  
5     tips of the wing may be bent toward the concave surface but not substantially in a second  
6     direction that is generally opposite to the first direction; and  
7                 wherein the wing is capable of returning to the steady state position by releasing the  
8     tips of the wing.

1           2.     The wing for a micro air vehicle of claim 1, wherein the at least one layer of a  
2     resilient material comprises a leading edge formed from a first material that is different from  
3     the material forming a remainder of the at least one layer.

1           3.     The wing for a micro air vehicle of claim 2, wherein the leading edge is  
2     formed from an aramid fiber/epoxy mixture and at least a portion of the remainder of the at  
3     least one layer is formed from a mixture of carbon fiber and epoxy.

1           4.     The wing for a micro air vehicle of claim 1, wherein the at least one layer of a  
2     resilient material is formed from pre-impregnated carbon/epoxy fiber cloth.

1           5.     The wing for a micro air vehicle of claim 1, wherein the at least one layer of a  
2 resilient material is formed from an aramid fiber/epoxy mixture.

1           6.     The wing for a micro air vehicle of claim 1, wherein the at least one layer of a  
2 resilient material is formed from materials selected from the group consisting of fiber  
3 reinforced laminates, sheet metal, foam materials, and plastics.

1           7.     The wing for a micro air vehicle of claim 6, wherein the fiber reinforced  
2 laminates are selected from the group consisting of carbon fiber reinforced polymers, glass  
3 reinforced polymers, and aramid reinforced polymers.

1           8.     The wing for a micro air vehicle of claim 6, wherein the sheet metal is selected  
2 from the group consisting of spring steel, aluminum, stainless steel, and titanium.

1           9.     The wing for a micro air vehicle of claim 1, wherein a wing span of the wing  
2 is between about three inches and about twenty four inches.

1           10.    The wing for a micro air vehicle of claim 1, wherein the wing is capable of  
2 being bent around a central body of a micro air vehicle so that the micro air vehicle including  
3 the wing may fit within a tube having a diameter of about three inches.

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1           11.    The wing for a micro air vehicle of claim 1, further comprising a riser section  
2 forming a concave portion on an upper surface of the wing proximate to a trailing edge of the  
3 wing.

1           12.    A micro air vehicle, comprising:

2           a central body;

3           a wing attached to the central body, wherein the wing comprises:

4                   at least one layer of a resilient material having a camber forming a concave  
5 surface facing downward;

6                   wherein the wing is bendable from a steady state position in a first direction  
7 such that tips of the wing may be bent toward the concave surface but not  
8 substantially in a second direction that is generally opposite to the first direction; and

9                   wherein the wing is capable of returning to the steady state position by  
10 releasing the tips of the wing.

1           13.    The micro air vehicle of claim 12, wherein the at least one layer of a resilient  
2 material comprises a leading edge formed from a first material that is different from the  
3 material forming a remainder of the at least one layer.

1           14.    The micro air vehicle of claim 13, wherein the leading edge is formed from an  
2 aramid fiber/epoxy mixture and at least a portion of the remainder of the at least one layer is  
3 formed from a mixture of carbon fiber and epoxy.

1           15.     The micro air vehicle of claim 12, wherein the at least one layer of a resilient  
2 material is formed from pre-impregnated carbon/epoxy fiber cloth.

1           16.     The micro air vehicle of claim 12, wherein the at least one layer of a resilient  
2 material is formed from an aramid fiber/epoxy mixture.

1           17.     The micro air vehicle of claim 12, wherein the at least one layer of a resilient  
2 material is formed from materials selected from the group consisting of fiber reinforced  
3 laminates, sheet metal, foam materials, and plastics.

1           18.     The micro air vehicle of claim 17, wherein the fiber reinforced laminates are  
2 selected from the group consisting of carbon fiber reinforced polymers, glass reinforced  
3 polymers, and aramid reinforced polymers.

1           19.     The micro air vehicle of claim 17, wherein the sheet metal is selected from the  
2 group consisting of spring steel, aluminum, stainless steel, and titanium.

1           20.     The micro air vehicle of claim 12, wherein a wing span of the wing is between  
2 about three inches and about twenty four inches.

1           21.     The micro air vehicle of claim 12, wherein the wing is capable of being bent  
2 around a central body of a micro air vehicle so that the micro air vehicle including the wing  
3 may fit within a tube having a diameter of about three inches.

1           22.     The micro air vehicle of claim 12, further comprising a riser section forming a  
2     concave portion on an upper surface of the wing proximate to a trailing edge of the wing.

1           23.     The micro air vehicle of claim 12, further comprising a tail coupled to the  
2     central body that is generally orthogonal to the wing.

1           24.     The micro air vehicle of claim 12, further comprising a tail coupled to the  
2     central body that is generally vertical to the wing.

1           25.     A wing for a micro air vehicle, comprising:  
2             a support structure forming an outline of the wing including a leading edge, a trailing  
3     edge, and wing tips;  
4             at least one layer of a material attached to the support structure forming a surface of  
5     the wing and having a camber forming a concave surface facing downward;  
6             wherein the wing is bendable from a steady state position in a first direction such that  
7     tips of the wing may be bent toward the concave surface but not substantially in a second  
8     direction that is generally opposite to the first direction; and  
9             wherein the wing is capable of returning to the steady state position by releasing the  
10    tips of the wing.

1           26.     A wing for a micro air vehicle of claim 25, wherein the support structure is  
2     formed from a plurality of ribs.

1           27.     A wing for a micro air vehicle of claim 26, wherein the plurality of ribs are  
2     formed from carbon fiber strands.

1           28.     A wing for a micro air vehicle of claim 25, wherein the at least one material is  
2     comprised of latex.

1           29.     The wing for a micro air vehicle of claim 25, wherein a wing span of the wing  
2     is between about three inches and about twenty four inches.

1           30.     The wing for a micro air vehicle of claim 25, wherein the wing is capable of  
2     being bent around a central body of a micro air vehicle so that the micro air vehicle including  
3     the wing may fit within a tube having a diameter of about three inches.

1           31.     The wing for a micro air vehicle of claim 25, further comprising a riser section  
2     forming a concave portion on an upper surface of the wing proximate to the trailing edge of  
3     the wing.